REMARKS

1. **Restriction R quirement.**

Claims 1-32 have been held subject to restriction.

Applicants hereby confirm the provisional election of the Undersigned to prosecute the invention of Group I, claims 1-21.

Please cancel claims 22-32 without prejudice as being directed to a nonelected invention.

2. **Rejection of claim 4 under 35 U.S.C. §112, 1st paragraph**

Claim 4 stands rejected for use of "epoxy functional materials" and "acrylics". In particular, the PTO states that there is no disclosure in the Specification of "epoxy functional materials" or "acrylics" as being suitable as thermally curable component (a2).

The Specification on page 12, paragraph [00051] has been amended to recite "epoxy functional materials" and "acrylics". The incorporation of these terms into the Specification is not new matter since these terms appeared in claim 4 as part of the original disclosure.

Reconsideration and removal of the rejection is respectfully requested.

3. **Rejection of claims 1-17 under 35 U.S.C. §112, 2nd paragraph; Rejections A-G.**

Claims 1-17 stand rejected as being indefinite for failing to particularly point out and distinctly claim the subject matter that applicants regard as the invention.

A. Claims 1-3 stand rejected for use of the abbreviation "UV", which the PTO notes should be replaced with "ultraviolet". Also, the abbreviation "UV/TH" is also said to be indefinite and should be replaced by "ultraviolet/thermal (UV/TH)" in the first occurance.

Applicants appreciate the PTO's suggestion and note that appropriate amendments have been made pursuant to the PTO's suggestions. Applicants further note that the definition of $^{UV}/_{TH}$ appearing on page 21 of the Specification has been incorporated into claim 1 to further clarify the claimed invention.

Reconsideration and removal of the rejection is respectfully requested.

B. Claim 1 is further said to be indefinite for use of the phrase "at least one bond....". In particular, the PTO further states that it

> ...is not clear what kind of bond is intended to be claimed, especially since the functional groups in (a11) have not been clearly identified (see page 8); in the definition of (a21) the kinds of functional groups intended to be claimed are not clearly set forth since the functional groups in (a3) are not clearly defined (see page 12); in the definition of (a31) the kinds of functional groups intended to be claimed are not clearly set forth since the functional groups (a21) are not clearly defined (see page 14). Claim 8 is also considered to be indefinite because the kinds of functional groups are not identified.
>
> *(Office Action of 11/20/02, page 5)*

Applicants appreciate the detailed basis of rejection but must respectfully disagree.

The first sentence of the second paragraph of Section 112 is a requirement for precision and definiteness of claim language. If the scope of subject matter embraced by a claim is clear and if the applicant has not otherwise indicated that he intends the claim to be of a different scope, then the claim particularly points out and distinctly claims the subject matter which the applicant regards as his invention. In re Borkowski et al., 164 USPQ 642, (CCPA 1970)

Definiteness of claim language must be analyzed, not in a vacuum, but in light of (1) the content of the particular application disclosure, (2) the teachings of the prior art, and (3) the claim interpretation that would be given by one possessing the ordinary level of skill in the pertinent art at the time the invention was made. *See, e.g., In re Marosi, 710 F.2d 799, 218 U.S.P.Q 289 (Fed. Cir. 1983).*

In this case, it is respectfully submitted that one of skill in the art reading the specification would understand what is meant by "at least one bond" and the nature of the various functional groups (a11), (a21), and (a31). It is noted that functional groups (a11) are defined independently, while functional groups (a21) and (a31) are defined in terms of their reactivity with each other. Claim 1 has been amended to indicate that functional groups (a21) must be reactive with functional groups (a31) rather than functional groups (a3).

The nature of functional groups (a11) is set forth on pages 8 & 9 of the Specification, particularly paragraphs [00031] to [00034]. It can be seen that this portion of the Specification sets forth both general and specific functional groups and bonds contained with such functional groups that are suitable for use within and as functional groups (a11). For example, the Specification states:

> **[00031]** Radiation curable component (al) contains on average at least two functional groups (a11) per molecule, and more preferably at least three functional groups (a11). Each functional group (a11) will preferably have at least one bond which is activatable upon exposure to electromagnetic radiation, and especially UV radiation, so as to crosslink. In a particularly preferred embodiment, each functional group (a11) will have one UV activatable bond.
> **[00032]** In a preferred embodiment, the coating composition of the invention will comprise not more than six functional groups (a11) on average per molecule, and most preferably not more than five functional groups (a11)on average per molecule.
> **[00033]** Examples of suitable bonds that can be activated with electromagnetic radiation, especially UV radiation, are carbon-hydrogen single bonds or carbon-carbon, carbon-oxygen, carbon-nitrogen, carbon-phosphorus or carbon-silicon single or double bonds. Of these, the double bonds are preferred, with the carbon-carbon double bonds being most preferred.
> **[00034]** Highly suitable carbon-carbon double bonds are present, for example, in (meth)acrylate, ethacrylate, crotonate, cinnamate, vinyl ether, vinyl ester, ethenylarylene, dicyclopentadienyl, norbornenyl, isoprenyl, isopropenyl, allyl or butenyl groups; ethenylarylene ether, dicyclopentadienyl ether, norbornenyl ether, isoprenyl ether, isopropenyl ether, allyl ether or butenyl ether groups; or ethenylarylene ester, dicyclopentadienyl ester, norbornenyl ester, isoprenyl ester, isopropenyl ester, allyl ester or butenyl ester groups. Of these, (meth)acrylate groups are preferred, with acrylate groups being most preferred.

It is therefore respectfully submitted that functional groups (a11) are not indefinite because one of ordinary skill in the art would understand what is meant by the phrase "at least one bond activatable by ultraviolet radiation".

Nor does the definition of functional groups (a21) and (a31) in terms of their respective reactivity render the claims indefinite. Paragraph [00048] of the Specification makes it clear that functional groups (a21) have to be selected so that a thermally initiated reaction with the functional groups of the crosslinking component (a3)

will occur. Specific examples of various functional groups can be seen in the paragraphs [00051] – [00051].

Likewise, the nature of functional groups (a31) can be understood from a review of paragraph [00061] which clearly indicates that functional groups (a31) will be those present in polyisocyanates, aminoplast resins, and/or tris(alkyoxycarbonylamino)triazines. In particular, it is respectfully submitted that one of skill in the art will appreciate the selection of the various functional groups reactive with such crosslinking agents and their respective functional groups.

As a result, reconsideration and removal of the rejection is respectfully requested.

C. Claim 1 is further rejected for use of the term $^{UV}/_{TH}$ on the grounds that it is not clear what has measured to arrive at the ratio "between 0.20 to 0.60".

The ratio $^{UV}/_{TH}$ is defined on page 6, paragraph [00021] and on page 19, paragraph [00079]. One of skill in the art reading these paragraphs will understand how this ratio is determined. It is also noted that this definition has been incorporated into claim 1 in an effort to fully address the PTO's concerns.

Accordingly, reconsideration and removal of the rejection is respectfully requested.

D. Claim 4 is said to be confusing for its recitation of "epoxy functional materials" and "acrylics". As noted above in Section 2, the Specification has been amended to provide support for these terms. Reconsideration and removal of the rejection is respectfully requested.

E. Claim 9 is rejected for a lack of antecedent basis for the term "NCO" in either claim 8 or claim 1. Similarly, claims 9 and 11-14 are said to be indefinite for use of the abbreviation "NCO".

The amendments to claims 9 and 10 above are believed to fully address the PTO's rejection. Reconsideration and removal of the rejections is respectfully requested.

F. Claim 13 is said to lack antecedent basis for the phrase "from 0.75 to 1.00" as used in claim 14.

Claim 14 has been amended to depend from claim 12 which recites a ratio of from 0.75 to 1.10.

Reconsideration and removal of the rejection is respectfully requested.

G. Claims 15-17 are said to be confusing for use of the phrase "nonvolatile weight".

Applicants respectfully submit that one of skill in the art will appreciate that "nonvolatile weight" refers to the weight of that part of a component that is nonvolatile. The Undersigned does not believe that the use of this term is indefinite but encourages the PTO to make any suggestions deemed necessary. Reconsideration and removal of the rejection is respectfully requested.

4. **Rejection of claims 1-5, and 8-21 under 35 U.S.C. §103(a) as obvious over Lahrmann et al., U.S. Patent 5,425,970, (hereafter "Lahrmann" or "'970").**

Applicants greatly appreciate the detailed basis of rejection but must respectfully disagree.

To establish a prima facie case of obviousness, three basic criteria must be met. First, there must some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. *MPEP 2143*

Lahrmann does not meet this standard.

Lahrmann teaches a process for the production of multi-coat lacquers that requires the use of two *separate* clearcoats. At least one of the clearcoats must be a heat-curable clearcoat while '...at least one *further* clear lacquer coat' must be applied that is a radiation-curable coating which is cured by UV radiation or electron beam radiation. *See '970, Abstract and claim 1.*

Thus, it is an operational principle of Lahrmann that two separate clearcoats be used, one that is heat cured and one that is cured with UV radiation or electron beam. In contrast, Applicants' invention requires the recognition that these functions can be combined in a *single* coating composition. In order to get Applicants' invention from Lahrmann, one of skill in the art would first have to recognize the problems solved by

Applicants' invention, and second to appreciate that the solution to such problems lay in the use of a single coating having *both* a UV curable binder component (Applicants' component (a1)) *and* a thermally curable binder component (Applicants' component (a2)).

Lahrmann does not recognize the problems addressed by Applicants' invention. As noted in Applicants' Specification:

> Efforts to use coatings curable solely with the use of actinic radiation have encountered other problems. Actinic radiation as used herein refers to electromagnetic radiation such as UV radiation or X-rays, as well as to corpuscular radiation such as electron beams. The unique contours and configurations of many shaped porous articles result in three-dimensional articles having 'shadow' zones or areas that are obscured from direct irradiance from the chosen energy source. Thus, the use of coatings cured via actinic energy sources can result in uncured or partially cured coating films in those shadow areas not visible to one or more of the energy sources. Alternatively, increased expense may be incurred due to the procurement of additional actinic energy sources in an effort to 'reach' all shadow areas. It will be appreciated that in many instances, manufacturing constraints will limit the number and/or location of actinic energy sources. Also, in many cases the overspray does not cure due to oxygen inhibition caused by the large surface area ratio of the particle and any dispersed oxygen within the particle.
>
> *(Applicants' Specification, page 2, paragraph [0007])*

These problems would not be resolved by Lahrmann's use of two separate coatings. A reference that performs a step of a claimed process for a different purpose and does not recognize the problem solved in applicants' process does not render the process obvious. *Ex parte Wisdom et al.*, 184 U.S.P.Q. 822 (POBA 1973)

Nor does Lahrmann provide any motivation or suggestion to solve these problems in the particular manner developed by Applicants, i.e., with the use of a single coating having *both* a UV curable binder component (Applicants' component (a1)) *and* a thermally curable binder component (Applicants' component (a2)). Without such a motivation, Lahrmann cannot provide a prima facie case of obviousness. A prima facie case of obviousness is established when the teachings from the prior art itself would appear to have suggested the claimed subject matter to a person of ordinary skill in the art. In re Rinehart, 189 USPQ 143 (CCPA 1976) There is no suggestion in Lahrmann to do what Applicants have done.

Indeed, modification of the process of Lahrmann so as to obtain Applicants' claimed process would change the basic nature and principle of operation of the invention set forth in the '970 patent. This fact supports Applicants' position that the '970 patent alone fails to provide a prima facie case of obviousness. If the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims *prima facie* obvious. *In re Ratti*, 123 USPQ 349 (CCPA 1959); MPEP 2143.01

It is the PTO's position that Example 6 of the '970 patent teaches the use of a composition containing Applicants' components (a1) and (a3) and that it would be obvious to include a non-radiation curable binder containing functional groups reactive with the functional groups (a31) because Example 6 uses a polyisocyanate.

Applicants' must respectfully disagree with this argument for several reasons.

First, the motivation must come from the reference, not from the PTO with the benefit of hindsight from Applicants' invention. Even if the teachings of a primary reference could be modified to arrive at the claimed subject matter, the modification is not obvious unless the prior art also suggests the *desirability* of such a modification. *In re Laskowski*, 10 U.S.P.Q.2d 1397, 1398 (Fed Cir. 1989).

The polyisocyanate in Example 6 is used to react with the hydroxyl functionality of the radiation curable component. Why would one of skill in the art add in something else for reaction with the polyisocyanate? The resulting crosslinks are taught to be all that is necessary to achieve the stated performance goals. In the absence of any teaching to do so, the additional of another binder crosslinkable with the polysisocyanate is merely an application of the prohibited "obvious to try" standard. "Obvious to try" is not a valid test of patentability. *In re Mercier*, 185 U.S.P.Q. 774 (CCPA 1975) Patentability determinations based on that as a test are contrary to statute. *In re Antonie*, 195 U.S.P.Q. 6 (CCPA 1977)

It is admitted that Lahrmann does not disclose a ratio corresponding to $^{UV}/_{TH}$. However, Applicants must respectfully disagree that

> ... the compositions disclosed [in Lahrmann] would be expected to provide the UV/TH ratio set forth in the instant claims in the absence of evidence to the contrary because the compositions comprise the kinds of functional groups set

> forth in the instant claims and disclose curing the disclosed compositions with UV radiation and th rmal postcuring...

or that

> ...[a]lternatively, it would be have been obvious to one skilled in the art at the time of the invention to determine the ratio of UV curable groups to thermally curable groups required to obtain the desired degree of crosslinking in the cured product.
>
> *(Office Action of 11/20/03, page 7)*

First, the mere allegation that the differences between the claimed subject matter and the prior art are obvious does not create a presumption of unpatentability which forces an applicant to prove conclusively that the Patent Office is wrong. *In re Soli*, 137 USPQ 797 (CCPA 1963)

Moreover, where the prior art gives no indication of which parameters are critical and no direction as to which of many possible choices is likely to be successful, the fact that the claimed combination falls within the scope of possible combinations taught therein does not render it unpatentably obvious. *In re O'Farrell*, 7 U.S.P.Q 1673 (CAFC 1988)

In this case, nothing in Lahrmann suggests the need to achieve a particular ratio between the radiation curable components versus the thermally curable components. Indeed, Lahrmann cannot do this because Lahrmann fails to disclose a single composition containing all such components.

Applicants' invention requires the recognition that two different types of components, i.e., those which are thermally crosslinkable and those which are radiation crosslinkable, must be balanced in a particular ratio. Nothing in Lahrmann provides any motivation to lead one of skill in the art to this recognition.

Accordingly, it is respectfully submitted that Lahrmann fails to provide a prima facie case of obviousness as to independent claim 1 and likewise to those dependent claims that incorporate the limitations of claim 1. Reconsideration and removal of the rejection is respectfully requested.

5. **Rejecti n of claims 1-5, 8-14 and 18-21 under 35 U,S.C. §103(a) as bvious over Sirk ch et al., U.S. Patent 4,634,602, (hereafter "Sirkoch" or "'602").**

Applicants appreciate the detailed basis of rejection but must respectfully disagree with respect to amended independent claim 1.

Sirkoch does not disclose or suggest a limitation required by Applicants' invention of amended independent claim 1.

As admitted by the PTO, Sirkoch does not require or suggest that the nonvolatile weight ratio of the sum of radiation curable component (a1) and optional reactive diluent (a4) to the sum of thermally curable binder component (a2) and thermally curable crosslinking component (a3) must be a particular value, i.e., that it is advantageous if the ratio ($^{UV}/_{TH}$) is a value between 0.20 to 0.60

However, with respect to the $^{UV}/_{TH}$ ratio, the PTO has again stated that

> ... the compositions disclosed [in Sirkoch] would be expected to provide the UV/TH ratio set forth in the instant claims in the absence of evidence to the contrary because the compositions comprise the kinds of functional groups set forth in the instant claims and disclose curing the disclosed compositions with UV radiation and thermal postcuring. Alternatively, it would be have been obvious to one skilled in the art at the time of the invention to determine the ratio of UV curable groups to thermally curable groups required to obtain the desired degree of crosslinking in the cured product.

(Office Action of 11/20/03, page 8)

Applicants must again disagree.

The statement that something is well known in the art does not supply the motivation necessary for a prima facie case of obviousness. Most importantly, Applicants' claimed invention involves more than mere optimization. Rather, it involves the recognition this ratio is important and effects the performance of the coating. That is, the prior art has failed to recognize that the failure to control this ratio brings undesirable performance properties.

A reference that performs a step of a claimed process for a different purpose and does not recognize the problem solved in applicants' process does not render the process obvious. *Ex parte Wisdom et al.*, 184 U.S.P.Q. 822 (POBA 1973) Of course, this case is distinguishable from *Wisdom* because in this case, Sirkoch does not do or suggest what Applicants have done, i.e., regulate and control the amount of radiation

curable components relative to the thermally curable components in a particular range, for *any* purpose.

Sirkoch is thus silent as to any need to control the $^{UV}/_{TH}$ ratio. Determination of obviousness cannot be based on the hindsight combination of components selectively culled from the prior art to fit the parameters of the patented invention." *ATD Corp. v. Lydall, Inc.*, 159 F.3d 534, 546, 48 USPQ2d 1321, 1329 (Fed. Cir. 1998). There must be a teaching or suggestion within the prior art, within the nature of the problem to be solved, or within the general knowledge of a person of ordinary skill in the field of the invention, to look to particular sources, to select particular elements, and to combine them as combined by the inventor. *See Ruiz v. A.B. Chance Co.*, 234 F.3d 654, 665, 57 USPQ2d 1161, 1167 (Fed. Cir. 2000); *ATD Corp*, 159 F.3d at 546, 48 USPQ2d at 1329;

Accordingly, reconsideration and removal of the rejection is respectfully requested with respect to amended claim 1 and the dependent claims incorporating the limitations of claim 1.

6. **Rejection of claims 1-5, 8-14, and 18-21 under 35 U.S.C. §103(a) as obvious over DE 99 333, (hereafter "'333").**

DE '333 is said to disclose compositions for SMC and BMC coatings that comprise a component (a1) corresponding to Applicants' component (a1), a component (a2) corresponding to Applicants' component (a3), and a component (a7) corresponding to Applicants' component (a2).

As a preliminary matter, it is noted that the German patent application DE 10113884.9 is not available as a reference until its international filing date. DE 10113884.9 was filed at the German Patent and Trademark Office on March 21, 2001. The corresponding PCT application was filed on March 21, 2002. Accordingly, this reference may not be used against the instant application. A copy of the face page of the PCT application is submitted herewith.

Accordingly, reconsideration and removal of the rejection is respectfully requested with respect to the rejected claims.

7. **Rejection of claims 1-5, 8-14, and 18-21 under 35 U.S.C. §103(a) as obvious over DE 99 141, (hereafter "'144").**

DE '144 is said to disclose compositions for SMC and BMC coatings that comprise a component (a1) corresponding to Applicants' component (a1), a component (a2) corresponding to Applicants' component (a3), and a component (a7) corresponding to Applicants' component (a2).

It is admitted by the PTO that DE '144 does not disclose or teach the required ratio of isocyanate groups to isocyanate reactive functional groups.

However, it is the PTO's position that

> ... the compositions disclosed would be expected to provide the UV/TH ratio set forth in the instant claims in the absence of evidence to the contrary because the compositions comprise the kinds of functional groups set forth in the instant claims and disclose curing the disclosed compositions with UV radiation and thermal postcuring. Alternatively, it would be have been obvious to one skilled in the art at the time of the invention to determine the ratio of UV curable groups to thermally curable groups required to obtain the desired degree of crosslinking in the cured product.
>
> *(Office Action of 11/20/02, page 10)*

Applicants appreciate the detailed basis of rejection but must respectfully disagree.

As previously noted, the statement that something is well known or obvious in the art does not supply the motivation necessary for a prima facie case of obviousness. Most importantly, Applicants' claimed invention involves more than mere optimization. Rather, as noted above, it involves the recognition that the amount of radiation curable components must be particularly balanced against the total amount of all thermally curable components and that the ratio of these type kinds of components must be between 0.20 to 0.60.

In contrast, DE '144 teaches only that the ratio of the isocyanate reactive groups (a12) to the isocyanate groups (a22) that should be considered. DE '144 is thus silent as to any need to control the ratio of radiation curable components to the thermally curable components.

Thus, DE '144 leads one of skill in the art away from the recognition that the total amount of radiation curable components must be particularly balanced against the total amount of thermally curable components in a dual cure coating.

A reference that leads one of skill in the art away from the claimed invention cannot provide a prima facie case of obviousness. For example, the Federal Circuit has clearly stated that "each prior art reference must be evaluated as an entirety, and ...all of the prior art must be evaluated as a whole". *In re Fritch*, 23 USPQ2d 1780, 1782. (Fed. Cir. 1992).

An evaluation of DE '144 indicates that it does not motivate one of skill in the art to do what Applicants have done. As such, it fails to provide a prima facie case of obviousness per MPEP 2143.

Accordingly, reconsideration and removal of the rejection is respectfully requested with respect to amended claim 1 and the dependent claims incorporating the limitations of claim 1.

6. **Double Patenting Rejection.**

Claims 1-25 have been provisionally rejected under the judicially created doctrine of obviousness type double patenting over each of claims 1-30 of copending Application No. 09/941118, claims 1-32 of copending Application No. 09/940748, and claims 1-30 of copending Application No. 09/941295.

In response, Applicants hereby file terminal disclaimers under 37 CFR 1.321 (c) with respect to each of the above copending Applications. All of the cited copending Applications and the instant Application are commonly owned, i.e., all said applications are assigned to BASF Corporation, as indicated by the attached assignments.

Accordingly, reconsideration and removal of the rejections is respectfully requested with respect to claims 1-25.

Respectfully Submitted,

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